

Monitoring Monday - Let's look at water data.

Join us each Monday as the Clean Water Team shares resources on water quality monitoring. This Monday is about water data.

March is Water Data Month. Follow the Water Boards and the California Water Quality Monitoring Council on social media where data visualizations and more will be shared.



WATER DATA

Data are individual facts, statistics, or items of information, often numeric. In a more technical sense, data are a set of values of qualitative or quantitative variables about one or more persons or objects, while a datum (singular of data) is a single value of a single variable. Data are transformed into information when they are viewed in context or in post-analysis.

What then is water data? What does it look like? Where does it come from? Well, as all good questions should be answered, that depends.

Water data comes in a variety of shapes and sizes. For example, environmental water data can come from handheld devices or in situ monitoring stations that remotely transmit data from lakes, rivers, oceans, or snowpack. Environmental water data includes measurement of physical parameters such as pH, dissolved oxygen, temperature, depth, precipitation, discharge, and velocity. It can also include biological and organic components such as chlorophyll levels, nutrient concentration, and bacteria count, to name a few.

Water data is collected by a diverse group of organizations across a wide range of sectors. The agricultural sector records measurements such as the volume of water withdrawn or diverted for irrigation and the volume of water returned to the environment. The industry, mining, and energy sectors also generate data on the volume of water they extract, its uses throughout their facilities, and the quality and quantity of water returned. Government agencies compile quantity and quality data for water collected by and distributed or released from water and wastewater treatment facilities. In addition, water utilities monitor environmental data for source water regions.



Water data is used for a variety of reasons, many of which are unique to the sector from which the data originated. For one, water data gives stakeholders and regulators the tools to ensure water rights compliance by farmers and ranchers, to monitor whether water treatment facilities are meeting drinking

water regulations, and whether wastewater utilities and industries are meeting discharge water quality requirements.

Environmental data informs stormwater management and flood planning. Water treatment plants prepare treatment regimens based on data from their source water. Ecosystem health can be inferred from water data as can the efficiency of industry operations. Water data plays a critical role in land use and city planning as the availability and quality of water often dictates which industries can operate in a region and whether a city can meet the needs of its population.

Together, these data tell a story about water resources and consumption on societal and ecological levels. Although seemingly specific, they offer the potential to answer our key questions: how much water is available, how is it being used, and what is its quality. Returning to the dilemma of growing demand and diminishing supply, our current chapter can seem rather grim. Understanding the story of water resources, however, gives managers the power to recognize which changes they can make to alter the outcome of that story.

With access to the water data they need, water leaders and decision-makers can implement sustainability measures and improved management strategies to ensure water is available to meet the needs of a changing and growing society. Utility and industrial managers can identify pain points and inefficiencies in their operations, enabling optimized processes, water conservation, and predictive maintenance. Land managers can better identify and mitigate ecological stress and contamination associated with water resources. Furthermore, water data can give city, state, and national planners a more holistic understanding of the condition and use of water resources within their jurisdictions to inform regional planning and decision making.

- [Water Data 101](#)

SHARING DATA & INFORMATION



Make Your Data Available to Others by Using CEDEN

Ensure a legacy for your programs environmental monitoring data. All water quality programs, including citizen monitoring and community science, that use acceptable, standardized, or validated, instruments and or methods while employing sound QA/QC with a QAPP can use the [California Environmental Data Exchange Network](#) (CEDEN). By using CEDEN your program's data is stored and made accessible. This allows the Water Boards and others to assess and make use of your data. It also ensures the longevity of your program's volunteers and funders efforts.

What is the [California Environmental Data Exchange Network](#) (CEDEN)? It is a central location to find and share information about California's surface waters, including streams, lakes, rivers, and the coastal ocean. Many groups in California monitor water quality, aquatic habitat, and wildlife health to ensure good stewardship of our ecological resources. CEDEN aggregates this data and makes it accessible to environmental managers and the public.

The state's valuable waterways provide many services, including water supply, wildlife habitat, recreation, and flood control. These functions can be hampered by pollution or other manmade stressors. To keep an eye out for problems and improvements, federal environmental regulations require each state to periodically assess the condition of surface water bodies. CEDEN consolidates California's data, including your program's data, in a central location, where it can be easily accessed by resource managers, scientists, citizen groups, and the public for reports and research purposes.

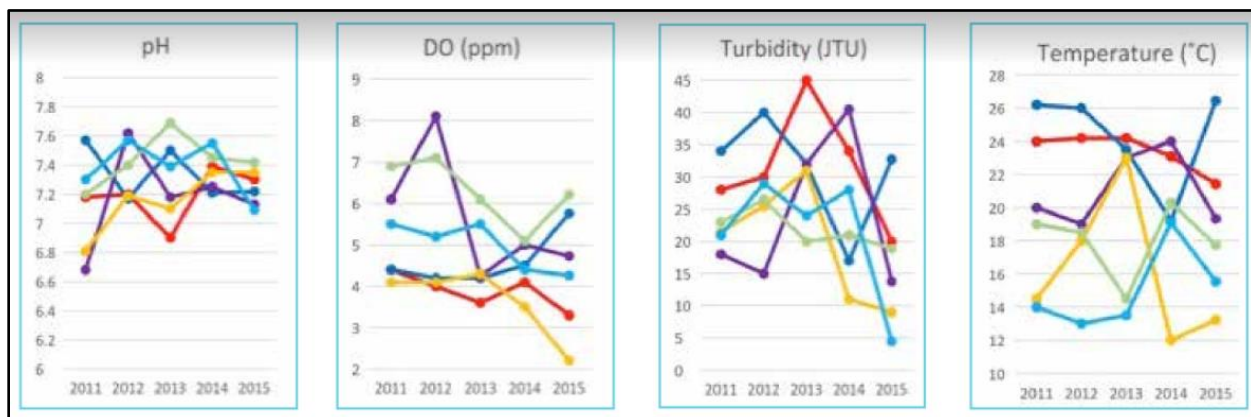
- CEDEN [Factsheet](#)
- CEDEN [Information Document](#)
- Getting Data into CEDEN And Why It Matters [Video](#)
 - 2019 Community Water Science Workshop [Playlist](#)



SHARE AND ACCESS EARTHECHO WATER CHALLENGE DATA

The [EarthEcho Water Challenge](#), the international water quality monitoring program that runs annually from March 22 offers participants the ability to share their data. Reports and data is can be downloaded [here](#).

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More Resources for Students:

- [STEM Education Data](#)
- [Find STEM Data Sources](#)
- [Data analysis](#)



The California Water Data Challenge

#CAWaterDataChallenge

Join the Challenge - Coming Soon: 2022 Water Data Challenge

If you and/or your employees have data-related skills to offer, please consider joining the challenge as an individual or as a team. Community Members experiencing water issues should join as mentors or community liaisons to guide the design and development of solutions. This is a great opportunity to put company service programs to good use by allocating staff time to engage in the challenge. Sign up for

email announcements about the Challenge at <http://bit.ly/CAWaterDataChallengeList>. Learn more about the challenge here: <https://waterchallenge.data.ca.gov/>.

2022 California Water Boards Water Data Science Symposium – Soon to be announced.

The [Surface Water Ambient Monitoring Program \(SWAMP\)](#) and the [California Water Quality Monitoring Council](#) hosts this free annual event to enhance how water quality monitoring generates and uses meaningful data to inform equitable water quality management decisions.

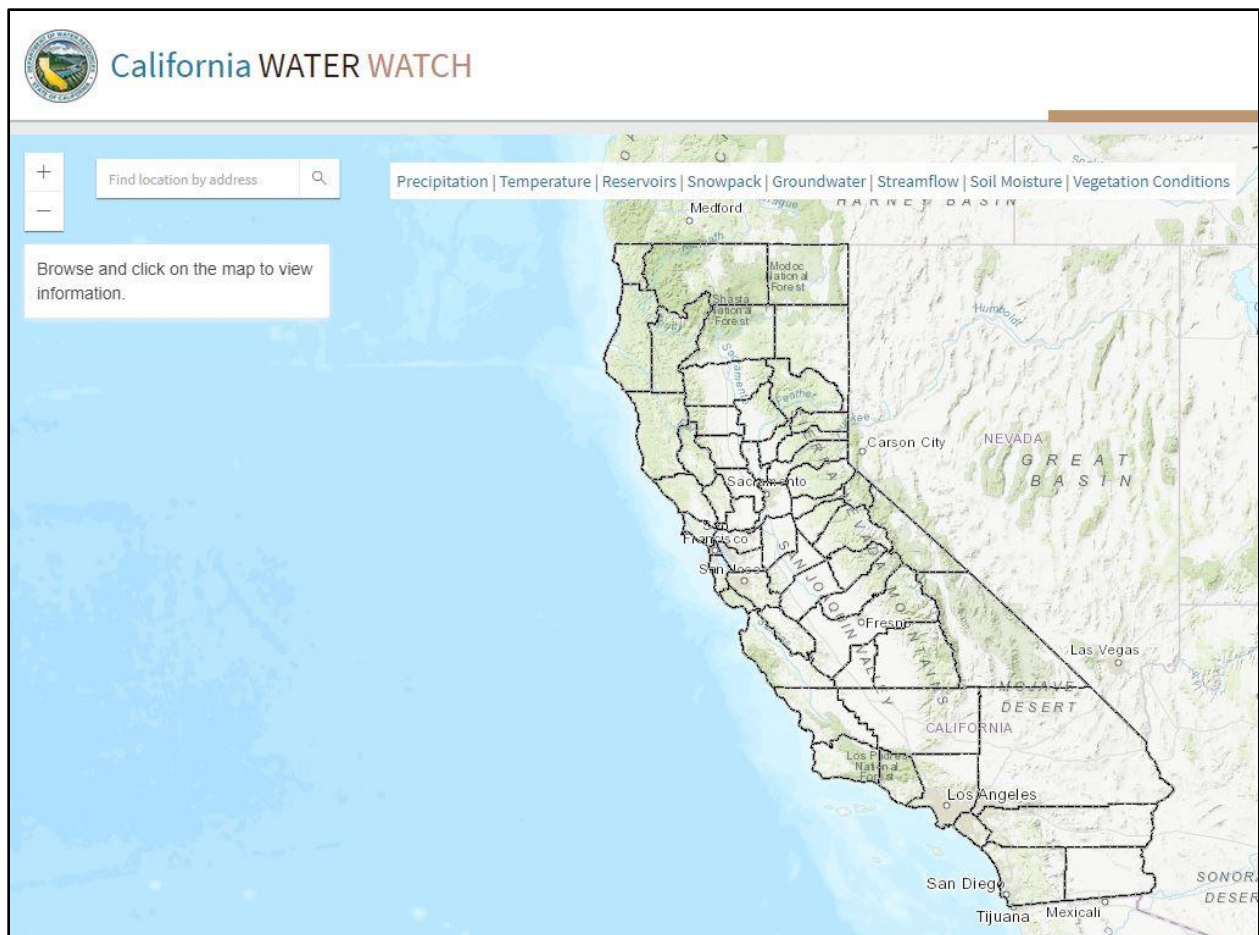
- www.waterboards.ca.gov/resources/data_databases/wq_science_symposium.html
- 2021 California Water Boards Water Data Science Symposium [Playlist](#)

Data Innovation and Utilization Workgroup

The [Data innovation and Utilization Workgroup](#) assists the California Water Quality Monitoring Council by creating protocols and guidance for utilizing data effectively across monitoring programs. Areas where the Data Innovation and Utilization Workgroup focus include reviewing current workgroup portals and visualizations and providing recommendations for improvements; actively identifying and providing use-cases from the Monitoring Council workgroups to support the Open and Transparent Water Data Act (AB 1755, Dodd 2016) effort; identifying and presenting larger statewide data issues and solutions to the Monitoring Council; and supporting the development of the Water Board's Data Management Strategy and Open Data Initiative.

Become a DIUW member! Membership is open to anyone with an interest in innovating and using water quality and ecosystem health data.

EXAMPLES OF HOW WATER DATA IS BEING USED IN CALIFORNIA

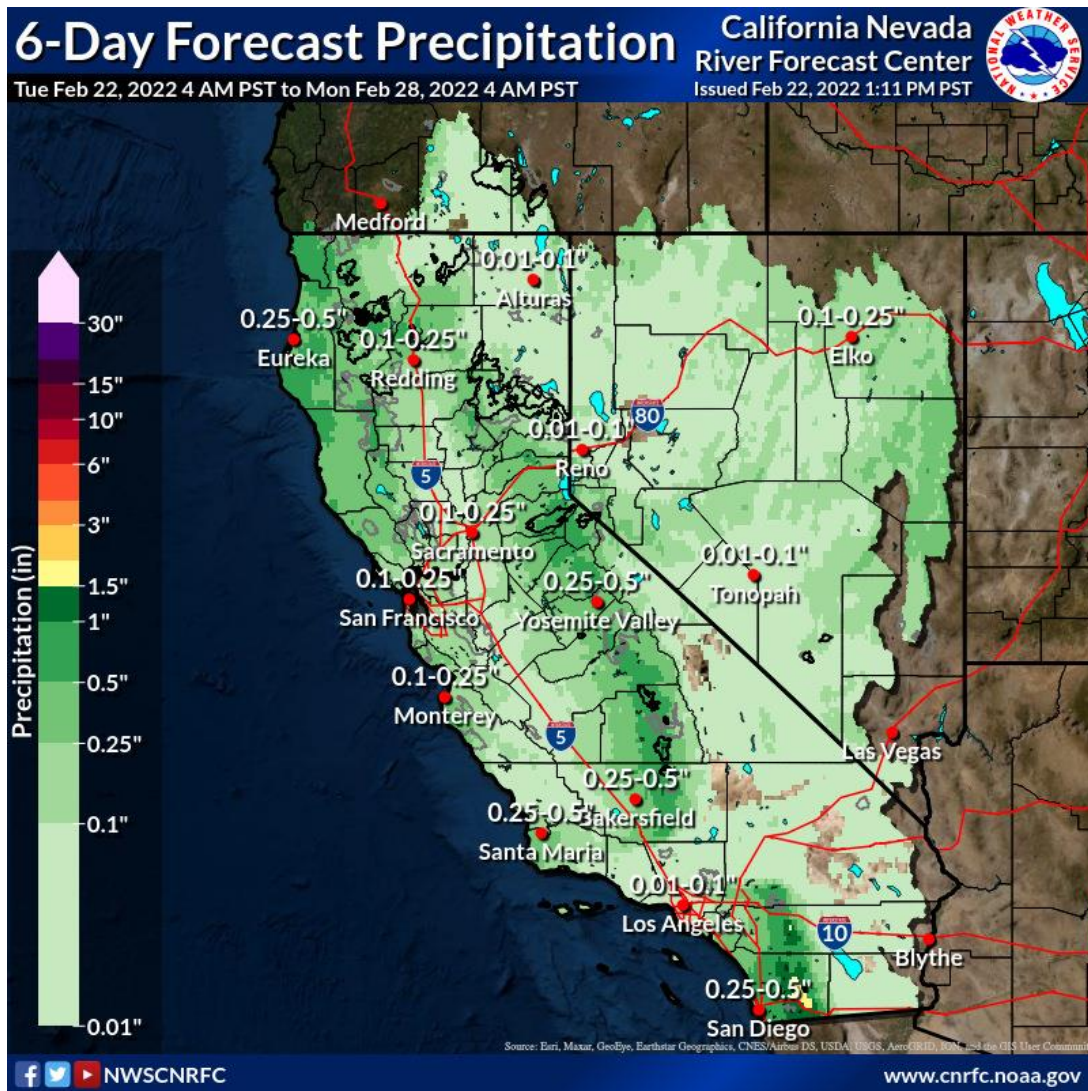


California Water Watch

[This site](#) offers the most current local and statewide water conditions down to your region and even your neighborhood. This information is updated dynamically from a variety of data sources. Everyone is welcome to research, learn, and stay informed about California's most precious resource -- water.

California has a Mediterranean climate characterized by warm, dry summers and mild, wet winters. The climate can vary depending on the geographical region where you live, and climate change is increasing this variability.

View a snapshot of California hydroclimate and water supply conditions showing current statewide hydroclimate and water supply conditions, including precipitation, temperature, reservoir storage, groundwater conditions, snowpack, streamflow, soil moisture and vegetation conditions. To view the conditions in your local area, you can enter [your address or zip code](#) in the location finder or search the [statewide map](#).



Forecasting Information

For viewers wishing to see additional information beyond current hydrologic conditions, [this page](#) provides some graphics and links to weather and longer-range outlooks. As indicated below, most of the information is provided by the National Weather Service, but we also included some experimental forecasting products that DWR funded the University of California, San Diego to prepare.

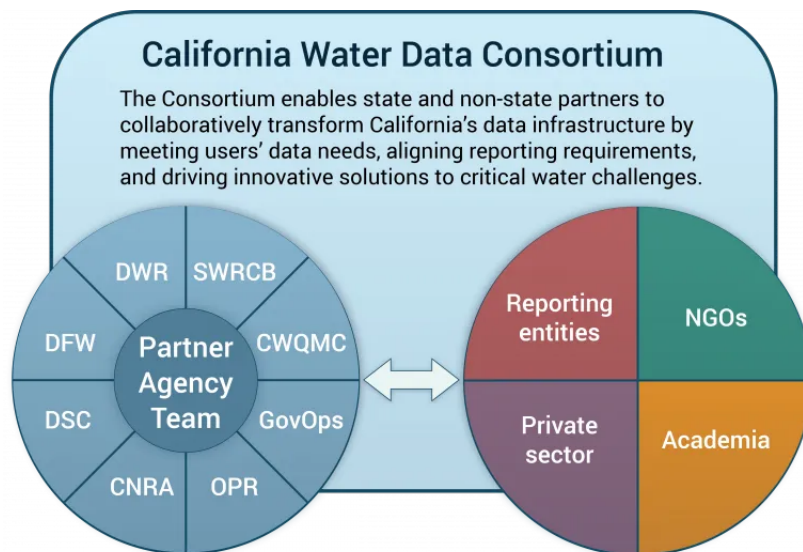
Water Data Library (WDL) Station Map

Use this [map](#) to locate monitoring stations. You can find an area of interest if you zoom and pan the map. Use the search box below to find features on the map such as the name of a city, park, landmark, lake, water feature, or zip code within California.

California Water Data Consortium

The [Water Data Consortium](#) serves as a neutral space that facilitates collaboration and sustained engagement across public, private, and nonprofit sectors to improve the data lifecycle and increase access to high quality, comprehensive and interoperable data to inform water decision-making.

The California Water Data Consortium provides an independent space for ongoing collaboration and sustained engagement between state agencies, water agencies, industry, NGOs, tribes, academia and others. We work collaboratively to increase access to high quality, comprehensive and interoperable data for a more resilient water future for all Californians.



Water Boards Data and Databases

The State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards (Regional Boards and collectively, the Water Boards) directs and collects vast amounts of data and information on the state's water quality, quantity, and uses, as well as the agency business operations. On July 10, 2018, the State Water Board adopted an Open Data Resolution (Resolution No. 2018-0032) to increase the focus on data management and accessibility at the Water Board. The Water Boards Strategic Data Action Plan describes a set of strategic actions that, when implemented, would significantly improve the way we manage and use data and information for both internal facing operations and external facing decisions about California's valuable water resources.

https://www.waterboards.ca.gov/resources/data_databases/

Accessing Data

A subset of the datasets maintained by the Water Boards can be found on the State of California's Open Data Portal under the 'Water' category. That platform provides web services that enhance data accessibility, and we plan to continue adding datasets to that platform in the future. Note that the datasets found on that site mirror some of the datasets described in the table below.

For questions regarding a specific database or dataset, please use the contact information provided for that program or database. For general questions regarding the content covered in this webpage, or if you cannot locate the contact information for a specific database, please contact the Water Boards' Office of Information Management and Analysis (OIMA) at OIMA-Helpdesk@waterboards.ca.gov.

USGS Water Data for the Nation

[These pages](#) provide access to water-resources data collected at approximately 1.9 million sites in all 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, American Samoa and the

Commonwealth of the Northern Mariana Islands. Online access to this data is organized around the categories listed to the left.

The USGS investigates the occurrence, quantity, quality, distribution, and movement of surface and underground waters and disseminates the data to the public, State and local governments, public and private utilities, and other Federal agencies involved with managing our water resources.



Advisory Committee on Water Information: Open Water Data Initiative

Quantifying the availability, use, and risks to our national water resources is an effort of national importance for the present and the foreseeable future. Improving access to data and enabling open exchange of water information is foundational to identifying and understanding existing water resources issues and developing sustainable future solutions particularly in the face of climate change and unprecedented drought. To address this challenge, we are proposing a new [Open Water Data Initiative](#) that will integrate currently fragmented water information into a connected, national water data framework and leverage existing systems, infrastructure and tools to underpin innovation, modeling, data sharing, and solution development.

Open Water Web			
water data Catalog	water data As a Service	Enriching Water Data	water data and tools Marketplace
Find source data	Consensus standards	Include routing	Community exercise of tools & data
Create water & climate themes	Visualization and delivery	Coupling with models	Data usage tracking
Recruit/engage partners	Catalog and serve	Grounded to geofabric	Community-built extensions (eg map)

The [Advisory Committee on Water Information](#) represents the interests of water-information users and professionals in advising the Federal Government on Federal water-information programs and their effectiveness in meeting the Nation's water-information needs.

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